

Aquatic Vegetation Benefits Fish and Fishing

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A study was initiated in 1999 to document the changes in the fish population and sport fishery in Mormon Trail Lake and Greenfield Lake from removing and maintaining a grass carp biomass so that aquatic vegetation occupy 25% to 40% of the littoral zones.

Grass Carp were stocked in both lakes in 1980 and again in Greenfield Lake in 1993 to control aquatic vegetation. Mormon Trail Lake has had no aquatic vegetation for ten years and the fishery has declined. Vegetation mapping in 1999 revealed no aquatic vegetation in Mormon Trail Lake and 19% of the littoral zone in Greenfield Lake was occupied by aquatic vegetation. Fish biomass estimates in 1999 showed Mormon Trail Lake contained 240 lbs/ac of fish while Greenfield Lake contained 567 lbs/ac of fish. Bluegill biomass in Mormon Trail Lake was 26 lbs/ac while bluegill biomass was 346 lbs/ac in Greenfield Lake. Largemouth bass biomass estimates in Mormon Trail Lake and Greenfield Lake were 35 lbs/ac and 85 lbs/ac, respectively.

Fifty grass carp have been removed from Mormon Trail since 1999, resulting in a biomass reduction of 58 lbs/ac. Thirty eight percent of the littoral zone in Mormon Trail Lake was covered with vegetation in 2004, and year classes of bluegill, crappie, and largemouth bass were established in 2000, 2001, 2002, 2003, and 2004. The water level in Greenfield Lake remained at normal elevation in 2004, and vegetation covered 15% of the littoral zone in August. Fish biomass estimates in Mormon Trail Lake during 2004 were: largemouth bass 78 lbs/ac, bluegill 214 lbs/ac, black crappie 56 lbs/ac, walleye 9 lbs/ac, and channel catfish 109 lbs/ac. The total fish biomass was 466 lbs/ac, while the estimated total fish biomass in Greenfield Lake was 530 lbs/ac. Greenfield Lake contained 70 lbs/ac of largemouth bass, 272 of bluegill, 30 lbs/ac of black crappie, and 134 lbs/ac of channel catfish in 2004.

Growth rates of predatory fish in Mormon Trail Lake were much slower than in Greenfield Lake. Largemouth bass grew to a mean length of 6.1 inches after three years, while the same age bass grew to a mean length of 10.1 inches in Greenfield Lake. The slow growth of bass in Mormon Trail indicates a lack of forage. The growth rates of largemouth bass and walleye in Mormon Trail Lake increased greatly during 2002, 2003, and 2004.

The increase in biomass of sport fish in Mormon Trail Lake was shown by the 1999 and 2003 creel surveys. No creel surveys were conducted on either lake in 2004. The average catch rate by anglers in Mormon Trail Lake was .55 fish/hr in 1999 and 1.62 fish/hr in 2003, while in Greenfield Lake the average catch rate was 4.00 fish/hr and 3.61 fish/hr in 1999 and 2002, respectively. Anglers harvested .62 fish/hr at Greenfield Lake while the harvest rate at Mormon Trail Lake was .26 fish/hr during 2003. The catch and harvest of fish at Greenfield Lake was higher in 2002 compared to 2003 because the water levels increased and angler access increased in 2002.